

REMARKS

Claims 1-47 are pending. No claims are currently withdrawn, cancelled or amended. Applicant respectfully requests reconsideration and allowance of all pending claims of the application in view of the following arguments.

Rejection under 35 U.S.C. § 103

Claims 1-47 stand rejected under 35 USC § 103(a) as allegedly being unpatentable over McCullough et al. (US 6,344,270) in view of any one of Ozawa et al. (JP 08-176701), Shimojima et al. (JP 03-071509), Blucher (US 2003/0029902) or Blucher (US 2005/0061538). Applicant respectfully disagrees with the rejection of the claims under 35 U.S.C. § 103(a), at least because the Patent Office has failed to meet its burden of establishing a proper case of *prima facie* obviousness, as required to support a rejection under 35 U.S.C. § 103(a) in view of the cited references.¹ Applicant respectfully contends that the Patent Office has at least not provided a combination of prior art references that teaches or suggests all limitations of Applicants' claimed invention², and further, has not met its burden of showing that the proposed combination provides a reasonable expectation of success in obtaining Applicant's claimed invention.

As a threshold matter, Applicant respectfully submits that the Patent Office mischaracterizes the teachings of McCullough et al. The Patent Office alleges that:³

McCullough teaches a composite wire or cable that includes fiber reinforced metal matrix composites comprising a wire core containing at least one tow comprising a plurality of substantially continuous, longitudinally positioned reinforcing fibers of ceramic or carbon which is encapsulated within a metal matrix (col. 3, ln. 31-45). McCullough further teaches that the wire or cable may have a metal covering the metal matrix composite core (col. 9, ln. 21-65 and figures 4-5). McCullough also teaches that the wire or cable has a roundness value of at least 0.95, a roundness uniformity value of not greater than 1.5%, and a diameter uniformity value of not greater than 0.5% over a length of at least 100 meters (col. 1, ln. 57 – col. 2, ln. 6). McCullough further exemplifies embodiments wherein the roundness uniformity value is as low 0.94% and the diameter uniformity value of 0.21% (Table 1, runs 12 and 6 respectively).

¹ See MPEP § 2142

² See *Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 231 USPQ 81 (Fed. Cir. 1986).

³ Office Action dated January 28, 2008, page 2, last ¶.

Applicant respectfully contends that the Patent Office mischaracterizes the teachings of McCullough et al. (hereinafter “McCullough”), in that McCullough has not been shown to teach a single composite wire or cable having both a metal covering the metal matrix composite core and a roundness value of at least 0.95, a roundness uniformity value of not greater than 1.5%, and a diameter uniformity value not greater than 0.5% over a length of 100 meters, as the Patent Office alleges, and as Applicant presently claims. Applicant agrees with the Patent Office that McCullough teaches individual metal matrix composite wires (e.g. 81A in McCullough Fig. 4) having the claimed roundness value and related uniformity characteristics. However, Applicant respectfully contends that the Patent Office has not shown that McCullough discloses, teaches or suggests, at col. 9, lines 21-65 and Figs. 4-5, a wire or cable having a metal covering the metal matrix composite core.

Applicant respectfully contends that McCullough actually teaches, at col. 9, lines 21-65 and Figs. 4-5, only forming a wire or cable comprising a plurality of metal matrix composite wires (e.g. 81 in Fig. 4) having a maintaining means, which “may be a tape overwrap, such as shown in FIG. 4 as 83, with or without adhesive, or a binder, for example.”⁴ Therefore, Applicant respectfully submits that the Patent Office has not shown that McCullough discloses, teaches or suggests Applicant’s presently claimed single metal matrix composite wire having an exterior surface, and a metal cladding covering and contacting substantially the entire exterior surface of the metal matrix composite wire, as Applicant presently claims.

Furthermore, Applicant respectfully contends that even if, *arguendo*, maintaining means 83, or even conductor layers 93A and 93B in McCullough Figs. 4-5, were viewed as being a metal covering as alleged by the Patent Office, such a covering clearly has not been shown to be a metal cladding covering and contacting substantially the entire exterior surface of the metal matrix composite wire, as Applicant presently claims. This is clearly shown by McCullough Figs. 4-5, where maintaining means 83 (Fig. 4) and conductor layers 93A and 93B (Fig. 5) do not contact substantially the entire exterior surface of the (plurality) of metal matrix composite wires (81 in McCullough Fig. 4).

⁴ US Pat. No. 6,344,270 B1, col. 9, lines 32-38.

In addition, Applicant respectfully contends that the Patent Office has not established that the wire or cable formed by providing a maintaining means such as a tape overwrap (e.g. 83 in McCullough Fig. 4) surrounding a plurality of individual metal matrix composite wires (e.g. 80 in McCullough Fig. 4) necessarily results in a wire or cable having a roundness value of at least 0.95, a roundness uniformity value of not greater than 1.5%, and a diameter uniformity value not greater than 0.5% over a length of 100 meters, as Applicant presently claims. Applicant respectfully submits that McCullough Fig. 4-5 clearly illustrate that the external perimeter of the wire or cable formed by providing a maintaining means such as a tape overwrap is not round, and therefore could not possibly exhibit Applicant's presently claimed roundness value and related uniformity characteristics.

With respect to McCullough in view of any of Ozawa et al. ("Ozawa"), Shimojima et al. ("Shimojima"), Blucher ("Blucher 902") or Blucher ("Blucher 538"), the Patent Office admits that McCullough does not exemplify an embodiment wherein a metal matrix composite core comprises a metal cladding, but alleges that:⁵

Ozawa teaches a metal matrix composite wire core **10A** comprising at least one tow bundle of continuous fibers **10** positioned with an aluminum metal matrix (Detailed Description of the Invention: Par[0007]). Ozawa further teaches that a covering layer **9** of aluminum is formed on the exterior surface of the metal matrix composite wire core **10A** (Detailed Description of the Invention: Par[0008 and 0010]). Ozawa teaches that such a metal covered metal matrix composite wire has good flexural rigidity and is particularly suitable for use as a power transmission line cable (Detailed Description of the Invention: Par[0008 and 0005-0006]).

The Patent Office further alleges that:⁶

⁵ Office Action dated January 28, 2008, page 3, last ¶ through page 4.

⁶ *Id.*, page 4.

Shimajima teaches a metal matrix composite wire core **1** comprising at least one tow bundle of long fibers **1a** positioned with an aluminum metal matrix **1b** (Abstract and Figure 3). Shimajima further teaches that a coating layer **4** of aluminum is formed on the exterior surface of the metal matrix composite wire core **1** (Abstract and Figure 6). Shimajima teaches that such a metal coated metal matrix composite wire prevents reduction in tension and flexibility of a power transmission line cable (Abstract).

Blucher'902 teaches a metal matrix composite wire core **58** comprising at least one tow bundle of long fibers positioned with an aluminum metal matrix having a cladding **50** formed on the exterior surface of the metal matrix composite wire core **58** (par [0046] and Figure 10). Blucher'902 teaches that such a metal clad metal matrix composite wire shows improved handling characteristics to similar wires which are not clad (par[0044]).

Blucher'538 teaches a metal matrix composite wire core **10** comprising at least one tow bundle of long fibers **12** positioned with an aluminum metal matrix **14** having a clad jacket **16** formed on the exterior surface of the metal matrix composite wire core **10** (par [0015, 0017-0018] and Figures 1-2). Blucher'538 further teaches that such a clad jacketed metal matrix composite wire exhibits considerable weight savings over existing power transmission cables, relatively high strength and a low coefficient of thermal expansion (par[00020]).

Thus, the Patent Office alleges that:⁷

It would have been obvious to one of ordinary skill in the art to have applied a clad coating to the exterior surface of the metal matrix composite wire core of McCullough since it is well known in the art to do so such as demonstrated by Ozawa, Shimajima, Blucher'902 and Blucher'538. One of ordinary skill in the art would have been motivated to have applied such a cladding coating to the wire core to form a composite having good flexural rigidity, improved handling characteristics, considerable weight savings, relatively high strength and/or a low coefficient of thermal expansion such as would be beneficial for power transmission lines

⁷ *Id.*, page 5, first ¶.

Applicant respectfully disagrees, at least because the Patent Office has not shown that McCullough combined with any of Ozawa, Shimojima, Blucher 902, or Blucher 538 actually discloses, teaches or suggests a single metal-cladded metal matrix composite wire or cable having a roundness value of at least 0.95, a roundness uniformity value of not greater than 1.5%, and a diameter uniformity value not greater than 0.5% over a length of 100 meters, as Applicant presently claims. Applicant respectfully contends that the Patent Office's reliance on McCullough for a disclosure, teaching, or suggestion of Applicant's claimed roundness value of at least 0.95, roundness uniformity value of not greater than 1.5%, and diameter uniformity value not greater than 0.5% over a length of 100 meters, is improper, at least because McCullough et al. is admitted not to disclose a single composite wire having a metal cladding covering and contacting substantially the entire exterior surface of the metal matrix composite wire, and further, because McCullough has not been shown to disclose, teach or suggest Applicant's presently claimed roundness value and related uniformity parameters, as argued above. In summary, the Patent Office has not shown that any of the cited references contains any disclosure, teaching or suggestion of Applicant's claimed roundness value of at least 0.95, roundness uniformity value of not greater than 1.5%, and diameter uniformity value not greater than 0.5% over a length of 100 meters, as applied to Applicant's claimed single composite wire having a metal cladding covering and contacting substantially the entire exterior surface of the wire.

The Patent Office seems to rely upon McCullough for such disclosure. However, as argued above, the Patent Office has not properly met its burden of showing that McCullough, or indeed any of the cited references, actually discloses, teaches or suggests all limitations of Applicant's presently claimed invention, at least because the references have not been shown to disclose or teach a metal-cladded metal matrix composite wire comprising a single metal matrix composite wire with a metal cladding covering, wherein the clad wire has a roundness value of at least 0.95, a roundness uniformity value of not greater than 1.5%, and a diameter uniformity value not greater than 0.5% over a length of 100 meters, as Applicant presently claims. Thus, Applicant respectfully submits that the Patent Office has not met its burden of establishing a proper *prima facie* case of obviousness.

The Patent Office alleges that “one of ordinary skill in the art would have been motivated to have applied such a cladding coating to the wire core to form a composite having good flexural rigidity, improved handling characteristics, considerable weight savings, relative high strength, and/or low coefficient of thermal expansion, such as would be beneficial for power transmission.”⁸ However, the Patent Office has not shown that, absent Applicant’s own disclosure, such desirable characteristics necessarily result from a metal-cladded metal matrix composite wire comprising a single metal matrix composite wire with a metal cladding covering, wherein the clad wire has a roundness value of at least 0.95, a roundness uniformity value of not greater than 1.5%, and a diameter uniformity value not greater than 0.5% over a length of 100 meters.

Thus, Applicant respectfully submits that the Patent Office’s rejection of the claims has been formulated by the improper and unwitting application of hindsight, for the references themselves, when viewed in light of the knowledge of one of ordinary skill in the art, contain no suggestion for combining and practicing the selected teachings thereof in a way that necessarily yields, or is reasonably likely to result in Applicant’s claimed invention.⁹ For at least these reasons, the Patent Office has not met its burden of showing that McCullough combined with any of Ozawa, Shimojima, Blucher 902, or Blucher 538, actually discloses, teaches or suggests all limitations of Applicant’s claimed invention, as required to establish a proper case of *prima facie* obviousness under 35 U.S.C. § 103(a). Thus, the rejection of claims 1-47 under 35 USC § 103(a) as allegedly being obvious over McCullough et al. in view of any one of Ozawa et al., Shimojima et al., Blucher (‘902) or Blucher (‘538) has been overcome and should be withdrawn.

⁸ *Id.*

⁹ *See Ex parte So and Thomas*, Appeal No. 2007-3967, page 3 (BPAI, January 4, 2008).

CONCLUSION

For at least the foregoing reasons, the Office Action has not met its burden of showing that the prior art makes obvious Applicant's claimed invention. The rejection of claims 1-47 under 35 U.S.C. § 103(a) as allegedly obvious, and thus unpatentable over the cited combinations of references, has been overcome and should be withdrawn. Reconsideration and withdrawal of the rejection of all pending claims is respectfully requested. In view of the above, it is submitted that the application is in condition for allowance. Allowance of all pending claims at an early date is solicited. The Examiner is invited to contact Applicant's attorney to resolve any remaining questions.

Respectfully submitted,

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